

NATIONAL INSTITUTES OF HEALTH
WARREN GRANT MAGNUSON CLINICAL CENTER
NURSING DEPARTMENT

Standard of Practice: Care of the Patient with Lumbar Subarachnoid Drainage System

ESSENTIAL INFORMATION:

- Prescriber's orders will include the specific management of the drain including to drain at a specific anatomical level or to drain according to a specific hourly volume.
- Specific anatomical level is usually ordered to be the external ear canal opening (tragus).
- If the prescriber orders to drain according to a specific hourly volume, the level of the drain is raised or lowered to achieve the ordered amount.
- Prescriber will order the lower and upper limits of hourly drainage.
- Hourly volume is dependent upon the condition of the individual patient and the specific rationale for the drain. Medical order should include hourly minimum and maximum parameters for CSF drainage.
- Lumbar drain should not be raised above the level of the ventricles (the external ear canal opening) without a specific order by the medical prescriber.

I. ASSESSMENT

A. Pre Procedure Assessment

1. Obtain baseline temperature, pulse, respirations, blood pressure, respiratory, circulatory and neurological assessment.
2. Assess patient's understanding of procedure, rationale and post procedure interventions and limitations.
3. Assess for presence of informed consent in the medical record.
4. Review laboratory studies and discuss with prescriber the need for additional tests.

B. Post Procedure Assessment

1. Assess the patient and the system q 1 hour for the following:
 - a. Position of patient
 - b. Dressing integrity
 - c. Integrity of suture securing the catheter-hub complex.
 - d. Amount and character of CSF drainage
 - e. Changes in CSF drainage pattern
 - f. Leaks in system
 - g. Position of drip chamber cylinder pressure level line (arrow) in accordance with medical order (use calibrated mounting pole).
 - h. System is open or system is clamped per medical order.
2. Assess neurologic vital signs (to include LOC, mental status, pupils, extraocular movements, visual fields, visual acuity, motor assessment), TPR, BP, and for the following signs/symptoms q 4 hours:

- a. Headache
- b. Nausea/vomiting
- c. Stiff neck
- d. Photophobia
- e. Temperature elevation
- f. Irritability
- g. Pain at catheter insertion site
- h. Sensation of fluid dripping down back of throat or at catheter insertion site.

II. INTERVENTIONS

A. Pre-Procedure Interventions

1. Complete the appropriate Pre-Procedure Checklist or the Operating Room Checklist.
2. Obtain supplies for placement of lumbar drainage system. These supplies are sent by the nursing unit with the patient if the drain is inserted in the Special Procedures Department:
 - a. Sterile gloves
 - b. Lumbar puncture tray
 - c. Epidural anesthesia tray
 - d. Lumbar catheter accessory kit
 - e. External drainage system
 - f. 3-0 silk and 3-0 nylon suture with cutting edge
 - g. Epidural transparent occlusive dressing (4" x 8"): #3 packages
 - h. Pre-printed label: "Lumbar CSF Catheter".
 - i. Suture Set
 - j. Skin prep solutions
3. Place the mounting pole with attached smooth edge cannula clamps at the patient's bedside.

B. Post Procedure Interventions

1. Position zero point on mounting pole at patient's external ear canal opening. Keep zero pointed at external ear canal opening when changing patient's position by moving and leveling mounting pole.
2. Adjust cylinder on mounting pole if indicated by the prescriber's orders to maintain CSF drainage. Keep cylinder attached to mounting pole and secured to IV pole at all times.
3. Maintain head of bed in the flat position with one pillow or as per medical order.
4. Keep motor power to bed turned off.
5. Maintain sign "**Lumbar Drain in Place**" on side rail of bed and on wall above bed.
6. Attach labels, "Lumbar CSF Catheter," to the lumbar catheter and the drainage system.
7. Maintain stopcock below drip chamber cylinder in the "off" position until cylinder needs emptying.
8. Place smooth, non-serrated plastic cannula clamp at bedside for clamping use if drainage system becomes disconnected or is leaking.
9. Change the lumbar drainage collection bag when it becomes 3/4 full.

10. Change the lumbar drainage collection bag and tubing if any portion of the drainage system becomes disconnected, contaminated, or occluded.
11. Do not change dressing. The prescriber will change the transparent occlusive dressing if integrity is interrupted.
12. If CSF stops flowing, reposition the patient from side to side and lower the cylinder 1-3 inches for no more than one minute.
13. If repositioning the patient fails to improve CSF drainage flow, notify the medical prescriber and prepare for the prescriber to irrigate the system with sterile preservative free normal saline or replacement of the drainage system. Do not attempt to manage an occluded system by withdrawing the blockage with a syringe or milking/stripping the tubing. Withdrawing the blockage with a syringe or milking the tubing may create a dangerous increase in negative pressure.
14. During patient transport, clamp the system, using the attached clamp on tubing.
15. Maintain drip chamber cylinder in upright position at all times. Change system if vent filter becomes wet.
16. If the collection system becomes accidentally disconnected, clean the proximal end with an alcohol swab and cap with a sterile cap until a complete new system is prepared. Notify prescriber.
17. Reinforce with patient every 8 hours to report the following to the nurse:
 - a. Headache
 - b. Nausea
 - c. Vomiting
 - d. Pain at catheter insertion site
 - e. Stiff neck
 - f. Any disconnection of system
 - g. Sensation of fluid dripping down back of throat or at catheter insertion site.
 - h. Photophobia
18. Tape 2 medicine cups to the top surface of the upper bedrail leaving a small space between each one to allow for the tubing to rest. This will help prevent forceful kinking or bending of the drainage system.
19. Instruct patient/family to report the following to the nurse:
 - a. Headache
 - b. Nausea
 - c. Vomiting
 - d. Pain at catheter insertion site
 - e. Stiff neck
 - f. Any disconnection of system
 - g. Sensation of fluid dripping down back of throat or at catheter insertion site.
 - h. Photophobia

III. Documentation

- A. Amount of hourly CSF drainage in MIS or other approved medical record form.
- B. Document every 4 hours all nursing assessments and nursing interventions related to the lumbar drainage system.
- C. Pressure level of cylinder on mounting pole (cm of H₂O).
- D. Patient and family teaching

E. Patient tolerance

IV. References

- A. National Institutes of Health, Clinical Center Nursing Department (2002). <http://intranet.cc.nih.gov/nursing/LUMSUBDR.htm>
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- D. Barker, E. (2002). *Neuroscience nursing: A spectrum of care* (2nd Ed.). St. Louis: Mosby.
- E. Lemole, G. M., Henn, J. S., Zabramski, J. M., & Sonntag, V. K. H. (2001). The management of cranial and spinal CSF leaks. *BNI Quarterly*, 17(4), 4-13.

Approved:

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